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Personality characteristics of sheep and goats

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Summary—A great deal of parapsychological research has investigated the effect upon extra-sensory perception (ESP), of the so-called ‘sheep-goat variable’ (SGV), that is, belief in the existence of ESP, either in the abstract or with respect to one’s own psychic ability. However, very little purely psychological research has examined the question of possible personality differences between ‘sheep’ (the ‘believers’) and ‘goats’ (the ‘disbelievers’). Personality factors are important both as potentially confounding variables, and as independent predictors of psi-scoring which could be used in combination with the SGV.

This paper reports two sets of experiments of the pilot-confirmation type: a grand total of 552 subjects were administered various personality tests plus one or other of two ‘sheep-goat scales’. Replicated results indicated that the SGV was related to extraversion-introversion and to conservatism-radicalism: sheep tend to be more extraverted and more conservative than goats, who tend towards introversion and intellectual skepticism.

INTRODUCTION

Ever since the 1940s, many parapsychologists have been investigating the relationship between ESP and various personality characteristics, such as extraversion and neuroticism. But perhaps the best-known and most widely used characteristic has been the so-called 'sheep-goat' variable, that is, belief in the existence of ESP, either in the abstract or with respect to one's own psychic ability. The evidence for the supposed positive relationship between belief in ESP and ESP test-performance (the so-called 'sheep-goat effect', or SGE) has been ably reviewed by Palmer (1971). He concluded that "... the data presently available support the hypothesis of a genuine SGE, although the relationship is very slight and difficult to demonstrate with small samples" (p. 405). However, very *little* research has been directed towards the question of possible *personality* differences between sheep and goats. This paper will set forth some reasons why this issue is a potentially important one, and will report the results of the efforts of two researchers to investigate the question.

First of all, the findings of such personality research may be interesting in their own right from the psychologist's point of view: they may shed light on the purely psychological factors involved in being a sheep or a goat. Secondly, and more importantly, if an individual's belief in ESP is related to his personality, then this may imply a serious confounding of variables in experimental situations, and may necessitate a re-evaluation of studies of the SGE: a given significant ESP scoring-difference between sheep and goats might be due not to the sheep-goat variable as such, but rather to some personality dimension upon which the sheep and goats differ. But thirdly, and more optimistically, findings of personality differences may provide a cross-road for the two relatively independent strands of research represented on the one hand by personality, and on the other hand, by the sheep-goat variable. For example, there is some evidence that ESP-performance is related to extra-version (Åström, 1965; Kanthamani and Rao, 1972). Given that (i) extraverts tend to score higher than introverts on tests of ESP, and that (ii) sheep tend to score higher than goats, one would therefore expect that sheep are more extraverted than goats. If such were found to be the case, then a promising experiment would be a comparison of the ESP-performance of extraverted sheep and introverted goats, with the prediction of a more marked and stable difference between the two groups. Furthermore, knowledge of the personality correlates of belief in ESP would prove valuable not only as a pointer to fruitful psi-research, but also as a guide to explicating and theorizing about the 'dynamics' of the sheep-goat variable and its effect on ESP.

As Palmer (1972) points out, though such data are relatively easy to generate, research into the personality characteristics of sheep and goats has been 'surprisingly neglected' (p. 11). Only two studies have reported such personality differences. Carpenter (1971), using the Mosher Guilt Scale, (Mosher, 1966), found unexpectedly that the scores on the sex-guilt scale were significantly higher for his goats than for his sheep. He speculated that "... persons who are relatively high in guilt about experiences as unavoidably human as sexual feelings and ideas would feel more need than others to keep such experiences to themselves, and hence would be less comfortable in a world in which ESP is a real possibility than one in which it is impossible by fiat" (p. 213). Again, Serena Roney-Dougal has recently found, using a small sample, significant correlations between an Attitude-to-Psi Questionnaire, and the As Openness-to-Experience Questionnaire and the Witkin Embedded Figures Test. Such personality research may bring us closer to the actual psychological dimensions relevant to ESP performance. The present paper brings together the work of two parapsychologists as a contribution to this research. The data will be presented in two sections: (1) two experiments by M.T., and (2) two experiments by E.H. In the concluding remarks, an attempt will be made to compare and synthesize the findings of the two authors.

SECTION I

The sheep/goat classification

There are several different classification schemes in existence that differ in important aspects from Gertrude Schmeidler's original classification of sheep as persons who accept the possibility of paranormal success under the conditions of the experiment, and goats as subjects who reject this possibility. The instruments used by M.T. and by E.H. are each examples of the 'scalar' approach. There are at least three 'Sheep-Goat Scales' in the literature (Bhadra, 1966; Jones and Feather, 1969; Van de Castle and White, 1955). The scale used by M.T. was formed from the responses to ten multiple-choice items covering a range of belief issues and personal experiences (see Table 1). This scale was not an attempt to represent every possible facet of the sheep-goat variable, but rather a simple, ad hoc summation of responses to the items. Nevertheless, it has shown some promise as a predictor of ESP performance in a free-response experiment, where correlations as high as +0.50 ($n = 31$) have been found (unpublished data). The scale-score theoretically ranges from 0 to 20. The scale has been administered to a total of 695 subjects (mainly university students) in both Australia and Scotland, and has been found to yield a mean of 9.1, with an S.D. of 4.3; Table 2 contains corrected item-total correlations, and the results of a principal-components factor analysis of the scale with Quartimax rotation.

Table 1. The ten items comprising M.T.'s Sheep Goat Scale

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- (1) I believe in the existence of ESP.
 - (2) I believe I have had personal experience of ESP.
 - (3) I believe I am psychic.
 - (4) I have had at least one hunch that turned out to be correct and which (I believe) was not just a coincidence.
 - (5) I have had at least one premonition about the future that came true and which (I believe) was not just a coincidence.
 - (6) I have dreamt at least one dream that came true and which (I believe) was not just a coincidence.
 - (7) I have had at least one vision that was not an hallucination and from which I received information that I could not have otherwise gained at that time and place.
 - (8) I believe in life after death.
 - (9) I believe that some people can contact spirits of the dead.
 - (10) I believe I have had at least one experience of telepathy between myself and another person.

All items have three alternative responses, viz., (a) true, (b) uncertain or (c) false. The sheep-Goat Scale score is obtained by assigning two points for a 'true' response, one point for 'uncertain', and zero points for 'false', and then summing the points for the ten items.

Table 2. Item analysis for M.T.'s Sheep Goat Scale (n = 695)

Item	Corrected item-total correlation	Factor loadings (quartimax rotation)		
		Factor 1 (general experience and telepathy)	Factor 2 (precognition and apparition)	Factor 3 (otherworldliness)
Belief in ESP	+0.44	0.675*	-0.061	0.409
Personal experience of ESP	+0.59	0.775*	0.288	0.008
Believe self to be psychic	+0.47	0.654*	0.242	-0.038
Have had a hunch	+0.55	0.406	0.643*	-0.038
Have had a premonition	+0.54	0.351	0.712*	-0.050
Have had a precognitive dream	+0.42	0.087	0.735*	0.117
Have had a paranormal vision	+0.32	0.083	0.583*	0.069
Believe in life after death	+0.24	0.004	0.146	0.829*
Believe in spirit contact	+0.25	0.139	0.023	0.825*
Have had telepathic experience	+0.49	0.706*	0.205	0.005

Factor	Eigenvalue	Percentage variance	Cumulative (%)
1	3.36	34	34
2	1.50	15	49
3	1.01	10	59

* Indicates that the item loads most heavily on this factor.

The personality scales

Six scales from three established questionnaire tests were administered. From the Cattell Sixteen Personality Factor Questionnaire (16PF) were taken Factor A (reserved vs outgoing), Factor H (shy vs venturesome) and Factor Q₂ (group-dependent vs self-sufficient). All these primary factors make large contributions to Cattell's second-order factor Introversion. Factors A and Q₂ each contain 10 questions, Factor H, 13, all of the 3-alternative response-format. Raw-scores were adjusted for age and sex, and converted to sten-scores, which range from 1 to 10, with a mean of 5.5. Form A of the 1967-68 revision was used. The norms employed were those given for Form A in the Norm Tables for the 1967-68 edition (Tabular Supplement No. 1): the college student norms for subjects 25 years of age or less, the adult norms for older subjects.

From the California Test of Personality (Thorpe *et al.*, 1953) were taken two scales, viz. Freedom From Withdrawing Tendencies, and Social Skills. The authors define each of these components of personal and social adjustment as follows: "The individual who is said to withdraw is the one who substitutes the joys of a fantasy world for actual success in real life. Such a person is characteristically sensitive, lonely and given to self-concern. Normal adjustment is characterized by reasonable freedom from these tendencies." "An individual may be said to be socially skilful or effective when he shows a liking for people, when he inconveniences himself to be of assistance to them, and when he is diplomatic in his dealings with both friends and strangers. The socially skilful person subordinates his or her egoistic tendencies in favor of interest in the problems and activities of his associates." Each scale contains 15 questions to be answered 'yes' or 'no', and the particular answer is counted which shows a better adjustment of personality, so that the higher the score, the better adjusted the individual. Raw-scores are converted to percentile-ranks via the normative data provided in the manual. Form AA of the Adult level of the test was used.

Finally, the Social Introversion Scale was used—a 70-item 'true-false' questionnaire derived by Drake (1946 from the Minnesota Multiphasic Personality Inventory (MMP1). Social introversion is characterized by withdrawal from social contact and responsibilities; little real interest in people is displayed; the scale also contains items covering a variety of special sensitivities, insecurities and worries. The norms employed were those provided by Hathaway and McKinley (1967). Raw-scores are converted to T-scores, which have a mean of 50 and an S.D. of 10; the higher the T-score, the more socially introverted the individual.

(i) *The first experiment* (n = 62)

Subjects. A total of 62 persons took part in this experiment, most of them students at the University of Adelaide, South Australia. Median age was 20 yr, the range being 16-29. There were 28 males and 34 females. Arts-oriented and science-oriented faculties were represented about equally.

Statistical procedures and results. It was planned, both in this experiment and in the other three studies to be described below, to designate the bottom 33½% of Sheep-Goat Scale scorers as goats, and the upper 33½% as sheep, eliminating from analysis the middle 33½% (whose sheep-goat status is rather indeterminate). However, a perfect 'three-way split' was not always possible, owing either to too small an initial sample or restricted range of possible Sheep-Goat Scale scores. In this first experiment, 23 subjects scored below 8 on the Scale and were designated goats, and the 28 subjects scoring 10 or more constituted the sheep. The two groups were compared on all six personality tests, using a *t*-test for independent samples, with 49 *df* and alpha at 5% (two-tailed). The differences between sheep and goats were significant on two of the six personality scales. For the Social Introversion scale, the sheep mean was 53.64, the goat mean 59.96, the *t*-ratio being 2.14, *p* = 0.038, omega-squared being 0.07. For Factor A, the mean for sheep was 5.29, for goats 4.26, *t* = 2.01, *p* = 0.049, omega-squared being 0.06. The differences on Factor H are marginally significant (*p* = 0.07), the sheep mean being 5.79, the goat mean 4.65, *t* = 1.85, omega-squared = 0.05. We may thus conclude that compared with sheep, the goats tended to be more reserved and more socially introverted. One should note, however, that the value of omega-squared [see Hays (1963) p. 327] are not particularly high, indicating only a small degree of association between the sheep-goat and personality variables.

In addition to *t*-tests, use was made of Rao's Stepwise Discriminant Analysis—a way of using the six personality scales as a set to predict whether a given subject is likely to be a sheep or a goat (see Klecka, 1975). The results of such an analysis indicated that, of the six personality variables, Social Introversion was the most important sheep-goat discriminator. The next most important variable was Freedom From Withdrawing Tendencies [possibly by virtue of its high negative correlation with Social Introversion ($s = -0.62$)], followed by Factor A. The discriminant function possessed a fairly high ability to distinguish sheep from goats: the canonical correlation was 0.504, Wilk's lambda was significantly low ($\lambda = 0.746$, $\chi^2 = 13.89$, $df = 3$, $p = 0.003$), and when the discriminant function was used to re-classify the subjects as sheep or goats 71% of subjects were correctly classified.

(ii) *The second experiment* ($n = 235$)

Subjects. All subjects in this study were members of the First Year Psychology class at Adelaide University (South Australia) during 1977. The age range was 16 to 51, skewed heavily towards the younger end, median age being 18. There were 86 males and 148 females. Arts and science faculties were equally represented.

Results. A total of 78 subjects scored 6 or below on the Sheep-Goat Scale, and were designated goats. Those 85 subjects scoring 12 or above were allocated to the sheep group. The results of *t*-tests for independent samples (161 *df*) showed that the differences between sheep and goats were significant on three of the six personality scales. For Factor H, the sheep mean was 6.00, the goat mean 4.99, $t = 3.30$, two-tailed $p = 0.001$, and omega-squared was 0.06. For Social Skills, the mean for sheep was 45.22, for goats 34.42, $t = 2.84$, $p = 0.005$, omega-squared 0.04. And for the Social Introversion Scale, the sheep mean was 52.85, the goat mean 56.99, $t = -2.72$, $p = 0.007$, omega-squared = 0.04. We may thus conclude that compared with sheep, the goats were more shy, more introverted and more lacking in social skills. Again, however, the effect is not very great, as indicated by the small values of omega-squared.

Rao's stepwise discriminant analysis indicated that the most important discriminating variable was Factor H, followed by Freedom From Withdrawing Tendencies (which correlates with the former at +0.60). The canonical correlation of 0.331 is fair, and the significant Wilk's lambda of 0.891 ($\chi^2 = 18.24$, $df = 5$, $p = 0.003$) shows that at least *some* power to discriminate between sheep and goats resides in the personality variables. The constructed discriminant function correctly re-classified 62% of the subjects.

(iii) *Prediction from the first experiment to the second*

The Social Introversion Scale has given a sheep-goat difference in both studies, and Factor H, too, shows some promise as a discriminator. It may thus be said that sheep have shown some tendency towards extraversion, and goats to introversion. However, the rather low degree of association between the sheep-goat and personality variables (as evidenced by the small values of omega-squared), leads one to expect difficulty in predicting an individual's sheep-goat status simply on the basis of his personality-scores. Nevertheless, prediction from the first sample to the second was attempted using the so-called 'classification equations' yielded by discriminant analysis on the initial sample of 51 subjects: two equations were derived, one for predicting membership of the sheep group, and the other, membership of the goat group. By multiplying a given subject's personality-scores each by their respective 'classification function coefficients', one arrives at two classification scores: the individual is classified into the group having the higher score. In this way, then, were the classification equations used to predict the probable group-memberships of the 162 subjects in the second study. However, in line with our expectations, the predictive power of the equations was very slight, correctly classifying 56% of the subjects and mis-classifying 44% (corrected $\chi^2 = 1.51$, $df = 1$, $p = 0.22$).

SECTION II

The sheep/goat classification

The Sheep-Goat Scale used by E.H. was formed from the responses to three multiple-choice items, concerning the reading of literature on psychic phenomena, as well as belief in telepathy, clairvoyance and precognition (see Table 3). The scale ranges from 3 to 12, and for a sample of 180 subjects had a mean of 7.8 and an S.D. of 2. The corrected item-total correlations were, for Reading about Psychic Phenomena, +0.51, for Belief in General ESP, +0.67, and for Belief in Precognition, +0.61.

The personality test

The test instrument was the Cattell Sixteen Personality Factor Questionnaire, Form C, translated into Icelandic and standardized for the native population. There are a total of 105 questions in this test, all of the

Table 3. The three items comprising E.H.'s Sheep-Goat Scale, translated from the Icelandic

(1) Do you read books or articles on psychic phenomena?	1. Never
	2. Seldom
	3. Now and then
	4. Often
(2) Do you believe in the existence of thought-transference, telepathy or clairvoyance?	1. Unthinkable
	2. Unlikely
	3. Likely
	4. Certain
(3) Do you believe in the ability to know the future or have dreams of it?	1. Unthinkable
	2. Unlikely
	3. Likely
	4. Certain

The Sheep-Goat Scale score is obtained by summing the point-scores opposite each individual response.

three-choice multiple-response type. The test is a set of 16 factor-analytically derived scales, each of which is said to measure a different 'primary source trait'. These factors are as follows: A (reserved vs outgoing), B (less intelligent vs more intelligent), C (affected by feelings vs emotionally stable), E (humble vs assertive), F (sober vs happy-go-lucky), G (expedient vs conscientious), H (shy vs venturesome), I (tough-minded vs tender-minded), L (trusting vs suspicious), M (practical vs imaginative), N (forthright vs astute), O (self-assured vs apprehensive), Q₁ (conservative vs experimenting), Q₂ (group-dependent vs self-sufficient), Q₃ (undisciplined self-conflict vs controlled) and Q₄ (relaxed vs tense).

(i) *The first experiment* (n = 75)

Subjects. A total of 75 subjects took part, all of them male First-Year students at the University of Iceland, Reykjavik. On average, they were 22 years of age, and represented a fairly random sample of students from all faculties at the University.

Results. Twenty-six subjects whose Sheep-Goat Scale scores were less than 8 became the goat group, and the sheep group comprised the 31 subjects scoring above 8. The mean scores for sheep and goats on the 16 primary factors were compared by *t*-test, with 55 *df*. The sheep-goat differences were significant on three of the 16 scales. For Factor Q₁ the sheep mean was 5.23, the goat mean 7.15, $t = -3.67$, $p = 0.001$ (two-tailed), omega-squared = 0.18. For Factor F the mean for sheep was 6.58, for goats 5.15, $t = 2.62$, $p = 0.011$, omega-squared = 0.09. And for Factor A, the sheep mean was 6.48, the goat mean 5.00, $t = 2.51$, $p = 0.015$, omega-squared = 0.09. The conclusion is therefore that compared with sheep, goats are more experimenting, more sober-minded, and more reserved. The values of omega-squared indicate that the sheep-goat variable was associated with about 9% of the variance in Factors F and A, and 18% of that in Factor Q₁. The latter, in particular, is mildly impressive, suggesting a moderate degree of association with the sheep-goat measure, the goats tending towards 'free-thinking intellectual skepticism' and the sheep towards 'religious and political conservatism'. [This seems to be a remarkable confirmation of the statement made 12 years ago by Eysenck (1967) to the effect that "... introverts tend to be characterized by scientific, cautious and doubting tendencies which would seem to predispose them to become 'goats', while extraverts are more characterized by artistic tendencies and to be less resistant to such group pressures as often exist (or may be imagined to exist) in ESP experimental circles" (p. 63)].

The results of Rao's stepwise discriminant analysis suggest that Factors Q₁ and F were the most important discriminators. A large degree of discriminating power exists in the six variables selected by the stepwise procedure, as shown by the high canonical correlation of 0.62, the low Wilk's lambda of 0.615 ($\chi^2 = 25.25$, $df = 6$, $p < 0.001$), and the successful reclassification of 79% of the subjects.

(ii) *The second experiment* (n = 180)

Subjects. There were 180 students in this experiment. The sample characteristics were very similar to those of the first sample except that 56 subjects were females.

Results. Sixty-four subjects scoring above 8 on the Sheep-Goat Scale were grouped as sheep, 78 below 8 being designated goats. For the *t*-tests, $df = 140$ and alpha was the usual 5°-0 (two-tailed). The differences between sheep and goats were significant on five of the 16 scales, (and marginally significant on one, viz. Factor G, where $p = 0.058$). On Factor A, sheep averaged 6.36, goats 5.15, $t = 3.45$, $p = 0.001$, omega-squared = 0.07. For Factor O, the sheep mean was 6.03, the goat mean 5.17, $t = 2.45$, $p = 0.015$, omega-squared = 0.03. On Factor L, the average for sheep was 5.31, for goats 4.56, $t = 2.22$, $p = 0.028$, omega-squared = 0.03. For Factor C, the mean for sheep was 4.91, for goats 5.17, $t = -2.04$, $p = 0.043$, omega-squared = 0.02. And finally, on Factor Q₁, the sheep mean was 5.72, the goat mean 6.49, $t = 2.00$, $p = 0.047$, omega-squared = 0.02. Thus, compared with sheep, the goats were more reserved, more self-assured, more trusting, more emotionally stable and more experimenting. However, the values of omega-squared are quite low, indicating that not very much of the variance in the personality variables was related to the sheep-goat variable.

The results of Rao's stepwise discriminant analysis demonstrate a modest ability to discriminate between sheep and goats, with Factors A and C being the most important: the canonical correlation was 0.451, Wilk's lambda 0.797 ($\chi^2 = 30.97$, $df = 7$, $p < 0.001$), and 68% of the subjects were correctly reclassified as sheep or goats.

(iii) *Prediction from the first experiment to the second*

Both Factor Q₁ and Factor A yielded significant differences in the two studies. It may therefore be said that sheep have shown a tendency towards being conservative and outgoing, and goats a tendency to be reserved and radical thinking. In general, however, the degree of association between sheep-goat and personality has not been very great: the effect has thus not been so strong as to ensure high predictability. It must also be noted that the Factors entering the discriminant functions differ quite markedly between the first and second study, which suggests some disparity regarding the personality-constellations designated as being relevant to the sheep-goat variable. Nevertheless, prediction from the sample of 57 to the sample of 142 was carried out using classification equations derived from the first experiment. The predictive power of the equations was not much better than chance, correctly predicting the group membership of 54% of the subjects but incorrectly classifying 46°-o (corrected $\chi^2 = 0.391$, $df = 1$, $p = 0.532$).

DISCUSSION AND CONCLUDING REMARKS

Each of the two sets of studies seems to have demonstrated the existence of certain relationships between personality and the sheep-goat variable. In M.T.'s work, the Social Introversion Scale has given consistently significant sheep-goat differences, as have Factors A and Q₁ in E.H.'s research. It is also promising that even though the authors have used such very different sheep-goat scales (the Icelandic one emphasizing belief, the Australian one experience), Factor A has yielded sheep-goat differences on three of the four occasions of its administration.

At the same time, it must be conceded that the magnitude of these effects is by no means large. The sheep-goat variable typically was related to a mere 7% of the variance in the personality measures. This is part of the

reason why, in both studies, prediction of sheep-goat status in a new sample proved relatively unsuccessful: personality is not a very strong predictor of whether a person is a sheep or a goat.

Nevertheless, it would still be true to say that if such personality-differences had been found in the context of an actual sheep-goat ESP experiment, they would to some extent have represented confounding variables. Sheep-goat researchers (or at least those using similar scalar measures of this variable) might therefore be advised to take these personality characteristics into account when planning their experiments, and when interpreting their findings. It would also be very valuable to investigate the personality-correlates of sheep and goats as defined by *other* classification schemes.

Finally, is it possible to derive from our own research any general conclusion as to what are the personality correlates of the sheep-goat variable? Our opinion is that one would not go very far wrong with the suggestion that goats tend to be slightly more introverted than sheep, on average. This opinion is based in part on some evidence from further analysis of our data (the details of which will be given here in only barest outline): (1) the 16PF yields, in addition to the 16 primary factors, eight 'second order' factors, and in both of his samples E.H. has found that sheep scored higher than goats on the extraversion factor; (2) the six personality-scales used by M.T. all seem to be relevant to extraversion; in his first study, they factor-analyzed to a single factor, and yielded a suggestive sheep-goat difference (two-tailed $p = 0.078$); in his second study the scales factor-analyzed to two factors, one of which ('social boldness') gave a highly significant sheep-goat difference, with the sheep higher on extraversion. Intuitively, it seems plausible to suppose that people who are socially withdrawn and have no great desire for interpersonal intimacy, would also feel uncomfortable and threatened by the notion of paranormal acquisition and communication of information, which might represent a potential intrusion into the privacy of their lives.

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